

fluence the ice-front; but the author points out that the crushing of the resisting masses in the lowlands is just what might be expected from a sudden addition of snow to the reservoirs in the hills. Changes of level, moreover, amounting to as much as 47 feet, took place in Alaska in 1899, and these may in part account for local variations. The description of the broad alluvial fan of the Hayden Glacier, with its streams changing in position and depth from day to day, is impressively interesting, as an illustration of the rate at which our own "glacial gravels" may have been distributed.

Perhaps Prof. Tarr's remarkable but modest paper will be hailed by M. Édouard Piette as an argument in favour of his more startling views ("Déplacement des Glaces polaires et grandes Extensions des Glaciers," Saint Quentin, 1906, pp. 36). M. Piette attributes the glacial climate of the northern hemisphere to the release of ice-masses by earthquakes at the pole. He urges that this would be assisted by the uprush of volcanic vapours and hot springs along the fissures, while cataclysms like that of the Straits of Sunda would fling the ocean waters irresistibly against the polar ice-cap. The Atlantic continent from Ireland to Iceland fell in about the same time by an "affaissement définitif," and the whole ice sped southward, leaving the pole for a time free. We confess that we can read M. Piette's paper far more sympathetically, now that we have the advantage of Prof. Tarr's conclusions; but there is a whirl of death and horror about his description of the great catastrophe that reminds us of the old diluvial theories, to say nothing of Dante's second circle. We read, moreover, that icebergs nowadays (p. 6), running aground on the coasts "d'Irlande ou d'Ecosse, y déterminent des froids intenses, capables de geler la végétation." Such a phenomenon would attract thousands of excursionists, and would surely be mentioned in our veracious daily papers.

The erosive power of glaciers is clear, wherever joints or any other planes of division in a rock are so arranged as to slope up against the direction of movement of the ice. "Plucking" then becomes a feature of the district. But, even on ice-smoothed surfaces, signs of rock-fracture under the pressure of the glacier are occasionally found. Prof. G. K. Gilbert discusses these "crescentic gouges" (*Bull. Geol. Soc. America*, vol. xvii., 1906, p. 303) as due to the presence of subglacial boulders. A line of type omitted on p. 313 renders one of the sentences obscure; but the argument put forward is that ice must have "greater power of resistance [to flowage] than some students have been disposed to admit. . . . The more rapid the flow the stronger the resistance. Therefore the crescentic gouges . . . may testify also to the relative rapidity of glacier movement." Prof. Gilbert's photographic illustrations are excellent, as are those of subglacial potholes in a subsequent paper on moulain work (*ibid.*, p. 317), in which it is pointed out that such moulain-hollows may be bounded during their formation on one side by rock and on another by the ice, leaving a rock-surface with flexuous incurvings when the glacier has disappeared by melting.

Prof. R. S. Tarr ("Glacial Erosion in Alaska," *Popular Science Monthly*, vol. lxx., 1907, p. 99) discusses the broader features of glacial erosion as displayed in hanging valleys. He postulates, in common with other writers, a considerable deepening of the main valley by ice; but may we not presume that the lateral valleys were largely developed and cut back by the frost-nibbling, under glacial conditions, on which Profs. Penck and Davis lay such proper stress? A main valley, with feeble lateral tributaries, may be occupied up to a certain level by ice, which widens it, deepens it somewhat, and wears back the poorly developed projecting spurs. The lateral valleys are at the same time rapidly weathered back under the new and more strenuous conditions of high-level erosion, and rocky cirques are formed at their heads in place of confluent stream-grooves. Tributary ice gathers in each lateral hollow, and the erosion above it, and also below it where a rushing stream emerges on the crevassed main glacier, cannot operate below the level where the two masses unite; and finally, if melting is rapid, hanging valleys are left, which will in time be cut down by ordinary weathering to the level of the main

valley-floor. If the main glacier diminishes by ablation slowly, the tributary glaciers and their subglacial streams cut down their valleys to keep pace with the falling surface, and these valleys finally cease to be of the hanging type, though showing glaciated floors. This seems to have been the case in much of central Connemara. This is not the place, however, to attempt to modify the theory of the deepening of glacial valleys so brilliantly put forward by Prof. W. M. Davis. Suffice it that Prof. Tarr disposes successfully of several of the fantastic theories put forward to account for a phenomenon of very wide occurrence in glaciated areas.

In the *Verhandlungen der schweizerischen naturforschenden Gesellschaft*, St. Gallen meeting, 1906, pp. 261-307, Herr J. Früh, of Zürich, writes a general essay, "Ueber Form und Grösse der glazialen Erosion," illustrated by personal observations on the topography of Switzerland. Hanging valleys, Alpine lakes, and "Uebertiefungen" are discussed, and useful references are given to Davis, Penck, and Brückner.

Lastly, we must not forget the work of water in its immense circulatory systems below the surface. The investigation of the "Underground Water Resources of Alabama," by Mr. E. Allen Smith (Geological Survey of Alabama, Montgomery, Alabama, 1907), has provided us with a neatly bound volume which is in many ways a guide to the geology of the State. The conditions favouring underground flow and the emergence of springs are discussed in pp. 32 to 63 in a manner that will interest engineers in general, as well as the ordinary citizen between the Tennessee River and the Gulf of Mexico. The great region for artesian water-supply in Alabama lies along the band of Cretaceous limestone, the Selwa Chalk, which passes just south of Montgomery. Several medicinal springs occur among the Tertiary strata towards the Gulf, including one (p. 320) that has been said to give protection against malarial fever.

G. A. J. C.

ENDOWMENTS FOR SECONDARY EDUCATION.

WHILE writing this article the following questions have been in mind:—(1) What are the number and extent of the educational endowments of our great public and other endowed schools? (2) What were the intentions of their founders? (3) How far are such intentions at present realised? (4) Can the endowments be made more generally available so as to increase their benefit to the public with the minimum departure from those intentions?

The answer to the two latter questions must be that it is largely a question of degree; from the nature of the case an expression of opinion, not a precise estimate, is all that can be attempted. The first two questions relate to definite matters of fact, the answers to which ought to be ascertainable, but are only approximately to be determined. A better reply to (1) would be forthcoming had either the late or the present Government fulfilled their promises to obtain a return, to be presented to the House of Commons, giving statistics of the finance of all endowed schools. We are informed that the Charitable Trusts Division of the Board of Education is considering the details to be sought in such inquiry, and it is to be hoped that considerations of its cost will no longer be allowed to stay its fulfilment. In the meantime, the following condensed account, based on such materials as were obtainable, is submitted as calculated to correct some of the grosser errors prevalent with regard to the subject of our ancient endowments. The writer wishes to acknowledge his indebtedness to the writings of Mr. A. F. Leach (Charity Commissioner) and to the courteous help of the officials at the Education Board, of course without implying that they have any responsibility for the statements which follow.

ENDOWED SCHOOLS BEFORE THE REFORMATION.

The records included in Mr. A. F. Leach's book entitled "English Schools at the Reformation" (Constable) show that 200 grammar schools at least, and more probably

300, flourished before the Reformation. The majority of these were abolished or crippled by the Government of Edward VI., who, by the strange irony of fate, is commonly credited with founding many of our endowed schools. Generally, it is correct to say that a King Edward VI. school means a foundation which was maimed by Edward VI., i.e. by the actual regent at the time. These schools were of various types, some existing as independent institutions, while many were connected with one of the following:—cathedral churches, monasteries, colleges, hospitals, guilds, or chantries. The endowments varied widely, Eton and Winchester having well-paid masters and seventy scholarships apiece, while Launceston paid an old man 13s. 4d. a year to teach young children. In addition to public schools and grammar schools there were choristers' schools and elementary schools. What we now call secondary education existed in fact, though not in name; with scholarships tenable at the schools, and exhibitions thence to the universities. According to the above authority, the boys were mainly of the middle classes, with younger sons and poor relations of the upper classes, and occasionally bright boys from the real poor. The character of the learning certainly supports this contention, Latin, dialectic and rhetoric, being taught up to a standard fitting the youth of sixteen to eighteen years of age for entrance to the university. Without entering into details (which it were easy to do), it can be asserted that the English schoolboy of the sixteenth century was immeasurably superior to his successor at the present day in respect to knowledge of Latin. Further, it appears to be true, alike of the past and the present, that, given good *quality* of education, the numbers seeking to avail themselves of its provision will take care of themselves. In round numbers, we find in the England of 1546 a population of two and a half millions, with 300 grammar schools, or one school for 8300 people. This compares well with the one school for 23,000 of the year 1865. One is tempted to wonder, though of course it is mere idle and somewhat melancholy speculation, what would have resulted had some wise statesman developed these disconnected but useful, and, for their day, efficient, institutions into an organised system of national education. Should we have become as a nation more scientific and artistic, but less robust and individual? As facts are, and as they have to be faced, the opportunity was lost, destruction and spoliation took the place of development, and to-day we are left with endowments, not indeed to be despised, but utterly inadequate to provide a tithe of the cost of higher education of the country.

1864. TO PRESENT DAY.

Under the chairmanship of Lord Clarendon, a commission of inquiry reported in 1864 on "The Revenues, Management, Instruction, and Studies of Eton, Charterhouse, Merchant Taylors', St. Paul's, Westminster, Winchester, Harrow, Shrewsbury, and Rugby." In 1868, the date of the Public Schools Act, there were 2956 scholars in these nine schools, and their net aggregate income, including exhibitions, was about 65,000*l.* a year. In 1905 the number of scholars was 4100, and their income, as to which only partial information is accessible, has increased in far larger proportion than the number of scholars. The position of Eton and Winchester Colleges is one of such independence that the Board of Education has no information as to their present financial position. They are undoubtedly wealthy, and their national importance makes periodical audit and publication of financial statements the more desirable. In 1890 the gross income of St. Paul's School endowment was stated to be 15,426*l.* A recent question raised by a member of the House of Commons has fortunately led to an investigation of the case of Harrow School. Here it appears that the endowment is worth about 1000*l.* annually, roughly half of which goes to the lower school of John Lyon, and the rest might easily be spent on clerical, legal, and office expenses connected with the foundation. In short, Harrow School is supported by the fees of the pupils. If any reader of this article should have been under the delusion that our ancient endowments are vast stores of unused or mis-

used wealth, this fact may prove one step in his disillusionment. It is to be hoped that the Board of Education will give us information about the income of the remaining five schools. Not being subject to the Endowed Schools Acts, they are not included in the Roby Return of Charitable Foundations presented to the House of Commons in 1892 (and reprinted in the Report of the Secondary Schools Commission of 1895). It does not appear from the reports of either the Clarendon or the Schools Inquiry Commission that the segregation of these schools was justified on any clear legal, proprietary, educational, or national ground. The following extract from the Clarendon Report is of interest:—

"Are the classes by whom these benefits are now enjoyed the same as those for whom they were originally intended? There is no doubt that the collegiate schools were primarily though not solely designed for the assistance of meritorious poverty; the independent grammar-schools primarily though not solely for the benefit of some particular town, village, or neighbourhood. . . . Speaking generally, it must be said that the difficulty of assigning a precise meaning to the word poverty, the doubt what class of persons, if any, at the present day really answers to the *pauperes et indigentes scolares* of the Lancastrian and Tudor periods, and the further doubt whether poverty is not after all best served by giving the widest encouragement to industry, coupled with the interest which every school has in collecting the best boys from the largest surface, have tended, and will continually tend, to render the qualification of indigence practically inoperative. We do not think it necessary to recommend any change in this respect."

One more extract refers to local privileges, often the right to gratuitous education:—

"The question we have to consider is, whether the maintenance of the local privileges in favour of these persons, and of the few permanent residents who desire a public-school education for their sons, is recommended either by respect for the founder's intentions or by any other sufficient reason. We think that it is not." (We may note that "these persons" refers to immigrants attracted to the town or village by cheap education through the foundation.)

Following the "Clarendon" Commission there was "The Schools Inquiry Commission" under Lord Taunton's chairmanship, which reported in 1867 on all the remaining schools, numbering 100 first-grade and 247 second-grade endowed grammar schools, including twenty-two in Wales. Of these, a few have ceased to exist or have become elementary, while occasionally the endowment has become a bursary or scholarship. Perhaps one-seventh have thus been lost to secondary education; the remaining six-sevenths still form to-day the core of the public secondary education of England.

Despite the remarkably able character of the commission and its arduous labours, we cannot altogether rely on the accuracy of an important part of the information contained in its voluminous report and minutes of evidence (twenty-one volumes), that part, viz., which purports to give the ancient history of the foundations. The commissioners mainly relied for this history on the earlier reports of the commissioners for inquiry concerning charities, 1818 to 1837. In a chronological list of schools given in his "English Schools at the Reformation," Mr. A. F. Leach assigns a different date from that given by the commission in a large majority of cases, differences amounting in some cases to centuries! As Mr. Leach is probably our best authority on this subject, we can feel but little confidence in the findings of the commission with regard to the original documents, deeds, and charters, particularly of the older foundations. This consideration does not, of course, affect the accuracy of their statements as to the position of the endowments in 1867, but it gives some support for further amendment of the Public Schools Act of 1869, which was avowedly based on the Taunton Report. Apart from amendments in detail, this Act governs most of our grammar schools to-day.

The powers of the Charity Commission to establish and amend schemes, which were transferred to the Board of Education by an Order in Council in 1901, were powers

under the 1869 Act. For example, head and assistant masters are dismissible "at pleasure" in nearly all endowed schools at this day, because the law of 1869 so enacts. Its importance may be indicated further from the fact that during 1905 alone there were 649 orders made, 470 relating to secondary and 179 to elementary education, by the Board in its exercise of these powers. Returning to the 1867 report, we find that there were in England and Wales 782 distinct foundations, 820 schools, 36,874 scholars, and annual income 210,000*l.*, exclusive of the nine great schools. Including these, but excluding elementary schools, we have 40,000 scholars and an income of 277,000*l.* a year. This was for a population of twenty-one millions. In an appendix is an interesting table showing the estimated number of boys (eight to fifteen years) of upper and middle class parents to be:—in towns, more than 15 per thousand; and in rural districts, 11 per thousand. Local inquiries made the number of boys in day schools other than elementary to be 16 per thousand of the population, so that private schools were responsible for the greater number. It is known that the standard represented by "secondary education" in most of these schools (public and private) was very low, in many cases decidedly below that of a good board school in the last decade.

In 1895 the Commission on Secondary Education, under the chairmanship of Prof. James Bryce, reported that for seven selected counties the number of boys was 2.48 and of girls 3.6 per thousand of the population in endowed and proprietary schools. In London the proportion of boys was slightly higher, that of girls decidedly less. Nor could it be seriously contended that private schools made up by their number, size, and efficiency for this most serious state of affairs. It has to be acknowledged that the attempt to leave secondary education to be provided by private enterprise and endowments has had disastrous effects. The great improvement made in the last decade, though in part due to a raising of the tone and standard of teaching in schools, both private and endowed, could not have advanced so far as has already been the case; still less could it make the needful progress we hope for in the immediate future, without the aid of the national exchequer and the local rates. It may be thought that by pooling the endowments and re-distributing them the expense to the rate-payer and tax-payer might have been avoided. The writer is not of this opinion. Some re-distribution would undoubtedly be of advantage, by making the endowments more generally available, and thus much benefit might accrue, as a comparatively small addition to the funds of a struggling school will often make a relatively enormous increase in its efficiency; but unfortunately the sums available are far less than is often supposed. The precise amount is not readily ascertained. The annual reports of the Charity Commission give no information on the subject; the "Statistics of Public Education in England and Wales," published by the Board of Education, despite its comprehensive title, merely deals with grant-aided schools; the balance-sheets of county education committees usually omit to give the endowments of the schools aided; and the inquirer has to fall back upon the Roby Return.

The return gives the gross income for the year 1890 of each individual charitable trust, but does not specify which part, if any, is educational. The 1895 Bryce Commission Report adds notes on the apportionment of each trust to educational and other uses, but often the directions are hopelessly intricate. No digest or summary is attached to these documents, and the present writer must be held responsible for the following statements, based on a rough analysis of the return:—In 1890 the number of foundations the endowments of which could provide entirely for the education of 100 boys (at 18*l.* per annum) was thirty-five; moreover, the number of boys and girls being educated at the schools of each foundation exceeded the number which the endowment alone would suffice to educate efficiently, the difference being made up by fees at the more expensive schools, and in other cases partly by fees and partly by Exchequer and local grants. When it is considered that in 1905 the Board paid grants amounting to 211,254*l.* on 51,779 scholars in 575 secondary schools, that these schools had in addition 30,000 scholars not earning grants, and

that the annual increase in grant-earning scholars is estimated to be 30,000, it is obvious that no large measure of financial relief to the community is to be found in re-distribution of endowments. What has happened is rather the inverse process; the municipal authorities have rescued impoverished schools with too meagre endowments.

THE NEAR FUTURE.

The control exercised by the Board of Education over schools aided by grants of public money has greatly increased during the last two years, and is destined to become more and more penetrating. It is inevitable that this development of bureaucratic influence should bring with it the usual concomitant advantages and evils. To make the most of the advantages, and to minimise the evils of centralisation should be our goal. We want local public interest in our schools, and a strong profession of teachers. One of the worst results of the extreme regard paid to the "individuality" of our schools has been to produce a body of schoolmasters suspicious of, if not hostile to, organisation, even of their own profession. This unfortunate sentiment is happily growing weaker, and will become evanescent as soon as it is realised that the schools themselves are becoming subject to a common authority, with its potency for good or ill to all under its sway. What the country as a whole needs is a proper devolution of responsibility to local education committees, with reservation to the central authority of certain functions the performance of which locally is open to serious objection. Among the latter may be placed the training of teachers, and the inspection of schools as regards conditions of health, while the local authorities should supply statistical information required by the Board. Each endowed school should have a board of governors, including members representing the local authority, and while the management of the school should be entrusted to the governors by the scheme, it should nevertheless be the duty of the latter to present to the former a yearly budget. Any pooling and re-distribution of endowments might be so limited as to preserve the benefits of each foundation to the area of the local authority in which it exists. This would largely limit the vehement opposition usually raised to any proposal to translate an endowment to a populous centre from a village where it is wasted, at the same time fulfilling in a reasonable manner the intention of the pious founder to provide for the native inhabitants of the place he endowed. For the smaller endowments (by far the greater number of those existing) this plan implies the extension of that municipalisation of endowments for which a precedent was set at Derby last year. With reference to the larger endowments, a word of caution is not out of place.

The leading public schools of England are among our most important national assets. Dating, as some of them do, from six, seven, or even eight centuries back, they have the advantage of unrivalled traditions, of inestimable value in influencing their character and tone. It would be a disastrous policy to destroy these for the comparatively trivial pecuniary gain to be achieved; but the question of reforming their constitution raises important questions of principle, which cannot be more than hinted at in this article. It appears to the writer that some mild infusion of democratic influence might be of mutual advantage to the schools and the neighbouring communities. There appears to be justice behind the claim for admission of fit boys from every social rank, and although such admission would only be of real benefit to the exceptional boy of poor parentage, the principle is not to be lightly disregarded. By sacrificing their "splendid isolation" and becoming associated with the national system of education, the great schools would be more truly doing their duty to the country, and the benefits reaped from their association with schools of all grades would not all be on the side of the humbler institutions. For these and other reasons one may hope that the Government will proceed with part ii. of the Education Bill (1906), which was dropped last year, a reprint of which those interested may find in "The Schoolmaster's Year-book for 1907" (Sonnenschein). Briefly, it conferred upon the Board enlarged powers to make new schemes and to amend old ones, with consider-

able simplification of procedure. Universities and their colleges were excluded from the operation of the Bill, and the segregation of the great schools of the 1868 Act was to be continued by their reservation from the more sweeping clauses; indeed, Eton and Winchester would only be affected so far as their governing bodies consented. Safeguards relating to the religious character of certain foundations were introduced, although Clause 16 states, and very rightly, that "in making a scheme regard shall be had primarily to the educational advantages to be derived from the scheme." May we not hope that the matter will be discussed and legislated upon in this spirit?

G. F. DANIELL.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The next combined examination for sixty-six entrance scholarships and various exhibitions at Pembroke, Gonville and Caius, King's, Jesus, Christ's, St. John's, and Emmanuel Colleges will be held on Tuesday, December 3, and following days. Mathematics, classics, and natural sciences will be the subjects of examination at all the above-mentioned colleges. A candidate for a scholarship or exhibition at any of the seven colleges must not be more than nineteen years of age on October 1, 1907. Forms of application must be sent in on or before Tuesday, November 26.

Mr. A. H. Lees, of King's College, has been appointed to the studentship in medical entomology for the period of one year. The studentship was recently established on the basis of a grant from the "Tropical Diseases Research Fund," administered by the Colonial Office. Mr. Lees will pursue research under the direction of the Quick professor of biology.

Of the four fellowships awarded last week at Trinity College, two were for classics; one of the remaining two was awarded to Mr. A. S. Eddington, senior wrangler in 1904, and first class, first division, part ii. of the mathematical tripos, 1905; and the other to Mr. V. H. Mottram, first class, part i. of the natural sciences tripos, 1903, and first class (physiology) in the same tripos, part ii., 1905.

Mr. A. Wood, who took his degree in chemistry and physics in 1904 as an advanced student, has been elected to a fellowship at Emmanuel College.

Mr. A. Berry, of King's College, has been appointed chairman of examiners for the mathematical tripos, part i. (old regulations), 1908.

At a Congregation to be held to-day, the honorary degree of Doctor of Science will be conferred on Prof. Emil Fischer, of Berlin.

LIVERPOOL.—Prof. J. Reynolds Green, F.R.S., lately professor of botany to the Pharmaceutical Society of Great Britain, has been elected to the Hartley lectureship in plant physiology, recently instituted in the botanical department through the generosity of Mr. W. P. Hartley, of Aintree.

Dr. J. W. Grindley has been appointed principal of the Government School of Engineering at Ghizeh, Cairo. The school is under the Egyptian Ministry of Education for the training of engineers for the various departments of the Egyptian public works.

Mr. W. MacGregor Wallace has been elected lecturer on applied mechanics in place of Dr. Grindley (resigned).

MANCHESTER.—The honorary degree of Ph.D. has been conferred upon Prof. Ernest Rutherford by the University of Giessen.

The following appointments have been made:—Dr. C. H. Weizmann, lecturer in chemistry; Mr. J. N. Pring, demonstrator in electrochemistry; Mr. F. H. Gravely, assistant lecturer and demonstrator in zoology. Mr. Frank Howson has resigned the position of demonstrator in physiology on his appointment to a similar post at the Armstrong College.

Dr. R. S. Hutton, on leaving Manchester, is resigning his position as lecturer in electrochemistry and assistant director of the physical laboratories, but has been appointed a special lecturer in electrochemistry.

THE Herter lectures before the medical department of the Johns Hopkins University are to be given this session by Prof. E. A. Schäfer, F.R.S., professor of physiology in the University of Edinburgh, at the end of April, 1908.

WE have received the current issue of the year-book of the Michigan College of Mines. It covers 136 pages, and contains in details of the courses arranged for the session 1907-8. The courses are admirably planned, and the situation of the college in the copper- and iron-ore district of Michigan, where its students live in a mining atmosphere, has brought to the institution a large measure of success.

UNDER the will of the late Dr. Nathaniel Rogers, the Senate of the University of London offers a prize of 100l., open for competition to all members of the medical profession in the United Kingdom, for the best essay or dissertation setting forth the results of original investigations made by the candidate on any medical pathological subject during the preceding two years. Candidates will be permitted to present papers published during the preceding year as the dissertation. The essay or dissertation, by preference typewritten or printed, must be sent in not later than May 1, 1908, addressed to the clerk of committees at the University.

THE prospectus for the session 1907-8 of the Belfast Municipal Technical Institute should prove of real assistance to intending students seeking guidance in planning their courses of work. It is quite clear from the volume, which runs to nearly 250 pages, that the chief object of the institute is to provide instruction in the principles of those arts and sciences which bear directly or indirectly upon the trades and industries of Belfast, and to show by experiment how these principles may be applied to secure industrial advancement. The classes are designed to assist persons engaged during the day in handicrafts or business, and desire to supplement the knowledge gained in the workshop or warehouse. The time-table of classes is published as a separate pamphlet, and with it a sensible letter of advice to students from the principal of the institute, Mr. Fras. C. Forth, indicating several directions in which students can assist the staff to secure success in the work of the various departments. Arrangements have been made for full courses of study in the various branches of science, art, technology, and commercial subjects.

AMONG the advanced lectures on scientific subjects announced in connection with the University of London to be held during the present session may be mentioned a course of eight lectures, by Mr. A. D. Hall, on the function of the mineral constituents of the soil in the nutrition of plants, to be given at the Chelsea Physic Garden on dates to be announced later. Mr. J. B. Leathes commenced a course of eight lectures on October 15 at the University physiological laboratory on problems in animal metabolism. At the same place four lectures on the construction of diets in health will be commenced by Dr. E. I. Spriggs on November 8. Three lectures on the principles of classification will be given at University College by Mr. G. A. Boulenger, F.R.S., beginning on October 28, and three lectures by Mr. J. T. Cunningham on sexual dimorphism, beginning on November 18. The University reader in meteorology will deliver at the University a course of twelve lectures on meteorological organisation and methods of dealing with meteorological observation, commencing on October 21.

THE *Electrician* for October 11 contains an interesting description of the electrotechnic institute of the Technical University in Karlsruhe (Baden), by Mr. Stanley P. Smith. The writer describes the general lay-out and equipment of the institute buildings, which were specially designed for the various branches of engineering carried on within them, but the description mainly deals with the electrotechnic institute itself. The cost and equipment of this building was between 2700l. and 2800l., and from the plans and description given there is no doubt that it is very perfectly arranged and fitted up. The general idea of the